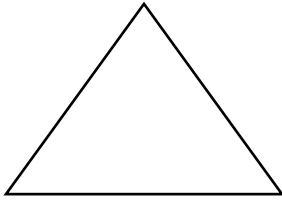


Special Angles - 30 and 60

Construct an Equilateral triangle with side lengths 2. Drop a vertical line from the top angle to the opposite side creating two Right-Triangles. The altitude will bisect the opposite side since it is an equilateral triangle. Determine the length of the altitude using the Pythagorean Theorem.



$$\sin 30^\circ =$$

$$\cos 30^\circ =$$

$$\tan 30^\circ =$$

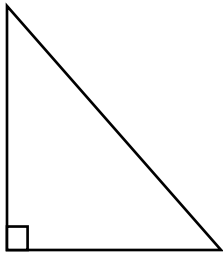
$$\sin 60^\circ =$$

$$\cos 60^\circ =$$

$$\tan 60^\circ =$$

Special Angles: 45

Construct an Isosceles Right-Triangle and determine all 3 trig ratios of the non-90 angle. (Tip: The equal side lengths are 1 unit each)



$$\sin 45^\circ =$$

$$\cos 45^\circ =$$

$$\tan 45^\circ =$$

NOTE: You should memorize these triangles/ratios, or at least be able to construct them! These angles will be used frequently.

For each of the following examples, complete **WITHOUT a calculator!**

**Example 1:** Determine the exact values of the three primary trig ratios of:

a)  $120^\circ$

b)  $210^\circ$

c)  $135^\circ$

**Example 2:** Determine the exact value of  $\sec^2 60^\circ - \tan 45^\circ \sin 30^\circ$

**Example 3:** If  $0^\circ \leq \theta \leq 360^\circ$ , determine all possible measures of angle  $\theta$  when:  $\cos \theta = -\frac{1}{\sqrt{2}}$

**Example 4:** If  $0^\circ \leq A \leq 360^\circ$ , find the possible measures of angle  $A$  when:  $\tan A = -1$